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CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for establishing a reservation of a lightpath traversing a plurality of lightpath segments coupled between nodes in an optical switched network, comprising:

passing a resource reservation request containing a generalized multi-protocol label-switching (GMPLS)-based label to each of the nodes traversed by the lightpath;

updating a segment ID field of the GMPLS-based label at each of the nodes to identify one of the plurality of lightpath segments to which each of the nodes is coupled; and

reserving each of the of lightpath segments along the lightpath for a scheduled timeframe by updating a reservation table maintained in each of the nodes with a respective lightpath segment reservation, wherein each lightpath segment reservation references its corresponding lightpath segment using the segment ID field contained in the GMPLS-based label, wherein an input wavelength employed for carrying signals over the lightpath segment is identified as a function of a channel spacing value.

2. (Original) The method of claim 1, wherein the optical switched network comprises a photonic burst switched (PBS) network.

3. (Original) The method of claim 2, wherein the optical burst switched network comprises a wavelength-division multiplexed (WDM) PBS network.

4. (Original) The method of claim 1, wherein the GMPLS-based label includes an input fiber port field identifying an input fiber port of a node at a receiving end of the lightpath segment identified by the GMPLS-based label.

5. (Currently Amended) The method of claim 1, wherein the GMPLS-based label includes at least one field identifying an input wavelength employed for carrying the signals over the lightpath segment identified by the GMPLS-based label.

6. (Original) The method of claim 5, wherein the input wavelength is defined by a value stored in the IEEE standard 754 single precision floating point format.

7. (Currently Amended) The method of claim [[6]] 1, wherein ~~the input wavelength is based on a function of a channel spacing variable, and~~ the GMPLS-based label includes ~~a wavelength field and~~ a channel spacing field to store [[a]] the channel spacing value.

8. (Original) The method of claim 1, wherein the method is performed by:

selecting a selected lightpath route comprising a plurality of lightpath segments coupled between the plurality of nodes, said lightpath route beginning with a source node and ending with a destination node and including at least one switching node between the source and destination nodes;

traversing lightpath segments on the selected lightpath route;

generating a GMPLS-based label for each lightpath segment; and

employing that GMPLS-based label for a corresponding lightpath segment to reserve that lightpath segment for the scheduled timeframe.

9. (Original) The method of claim 8, wherein the method includes:

determining, at each node along the selected lightpath route, whether the lightpath segment received at that node and a corresponding network resource are available for use during the scheduled timeframe; and

reserving a network resource for a given lightpath segment for the scheduled timeframe if it is available, otherwise providing indicia to the source node to indicate the network resource for the given lightpath segment is unavailable for the scheduled timeframe.

10. (Original) The method of claim 8, wherein the selected lightpath route comprises a first selected lightpath route, the method further comprising:

selecting a second selected lightpath route;

determining, at each node along the second selected lightpath route, whether the lightpath segment received at that node is available for use during the scheduled timeframe; and

reserving a given lightpath segment for the scheduled timeframe if it is available, otherwise providing indicia to the source node to indicate the given lightpath segment is unavailable for the scheduled timeframe.

11. (Original) The method of claim 8, wherein the method includes:

performing a forward traversal of the selected lightpath route from the source node to the destination node;

determining, at each node along the forward traversal, whether the lightpath segment received at that node is available for use during the scheduled timeframe; and

temporarily reserving a network resource for a given lightpath segment for the scheduled timeframe with a soft reservation if it is determined to be available;

determining if all of the lightpath segments along the selected lightpath route and network resources are available for use during the scheduled timeframe; and

committing the soft reservations for each lightpath segment if it is determined that all of the lightpath segment network resources are available for use during the scheduled timeframe.

12. (Original) The method of claim 11, wherein the soft reservation are committed by:

performing a reverse traversal of the selected lightpath route from the destination node back to the source node;

setting the soft reservation corresponding to a given lightpath segment to a hard reservation as the node corresponding to that lightpath segment is encountered during the reverse traversal.

13. (Original) The method of claim 1, wherein data corresponding to the reservation of the lightpath is stored in a reservation lookup table, the method further comprising:

sending a control burst, during a given timeframe, across the optical switched network from a source node to a destination node; and

looking up, in the reservation lookup table, appropriate lightpath segments via which the control burst is to be routed to traverse a lightpath linking the source and destination nodes based on lightpath segment and resource reservations corresponding to the given timeframe.

14. (Currently Amended) A switching apparatus for use in an optical switched network, comprising:

optical switch fabric, having at least one input fiber port and at least one output fiber port; and

a control unit, operatively coupled to control the optical switch fabric, including at least one processor and a storage device operatively coupled to said at least one processor containing machine-executable instructions, which when executed by said at least one processor perform operations, including:

receiving a resource reservation request from a first node, said resource reservation request including a first generalized multi-protocol label-switching (GMPLS)-based label identifying a first lightpath segment between the first node and the switching apparatus, which comprises a second node, wherein the GMPLS-based label includes a segment ID field to identify the first lightpath segment, wherein an input wavelength employed for carrying signals over the first lightpath segment is identified as a function of a channel spacing value; and

scheduling a coarse-grained time-reserved use of the first lightpath segment for subsequent transmission of data via the first lightpath segment.

15. (Original) The switching apparatus of claim 14 wherein execution of the instructions further performs the operations of:

creating a second GMPLS-based label identifying a second lightpath segment between the switching apparatus and a third node;

replacing the first GMPLS-based label in the resource reservation request; and forwarding the resource reservation request to the third node.

16. (Original) The switching apparatus of claim 14, wherein the optical switched network comprises a photonic burst switched (PBS) network.

17. (Original) The switching apparatus of claim 16, wherein the optical switched network comprises a wavelength-division multiplexed (WDM) PBS network; and the optical switching fabric provides switching of optical signals comprising different wavelengths carried over common fibers that may be respectively coupled to said at least one input fiber port and said at least one output fiber port.

18. (Original) The switching apparatus of claim 14, wherein the first GMPLS-based label includes an input fiber port field identifying an input fiber port of the switching apparatus corresponding to an end of the first lightpath segment.

19. (Currently Amended) The switching apparatus of claim 14, wherein the first GMPLS-based label includes at least one field identifying a wavelength employed for carrying the signals over the first lightpath segment.

20. (Original) The switching apparatus of claim 19, wherein the input wavelength is defined by the IEEE standard 754 single precision floating point format.

21. (Currently Amended) The switching apparatus of claim [[20]] 14, wherein ~~the input wavelength is based on a function of a channel spacing variable, and~~ the first GMPLS-based label includes ~~a wavelength field and~~ a channel spacing field to store [[a]] the channel spacing value.

22. (Original) The switching apparatus of claim 14, wherein execution of the instructions further performs the operation of storing a time-reserved use of the first

lightpath segment that is scheduled in a reservation table maintained by the switching apparatus.

23. (Original) The switching apparatus of claim 14, wherein said at least one processor includes a network processor.

24. (Original) The switching apparatus of claim 23, wherein said at least one processor further includes a control processor.

25. (Currently Amended) A tangible machine-recordable medium to provide instructions, which when executed by a processor in a switching apparatus comprising a first node in an optical switched network, cause the switching node to perform operations comprising:

receiving a resource reservation request from a second node, said resource reservation request including a first generalized multi-protocol label-switching (GMPLS)-based label identifying a first lightpath segment between the second node and the switching apparatus, wherein the GMPLS-based label includes a segment ID field to identify the first lightpath segment, wherein an input wavelength employed for carrying signals over the first lightpath segment is identified as a function of a channel spacing value; and

scheduling a coarse-grained time-reserved use of the first lightpath segment for subsequent transmission of data via the first lightpath segment.

26. (Previously Presented) The tangible machine-recordable medium of claim 25, wherein execution of the instructions further performs the operations of:

creating a second GMPLS-based label identifying a second lightpath segment between the switching apparatus and a third node;

replacing the first GMPLS-based label in the resource reservation request; and

forwarding the resource reservation request to the third node.

27. (Previously Presented) The tangible machine-recordable medium of claim 25, wherein the optical switched network comprise a wavelength-division multiplexed (WDM) photonic burst switched (PBS) network.

28. (Previously Presented) The tangible machine-recordable medium of claim 25, wherein the first GMPLS-based label includes an input fiber port field identifying an input fiber port of the switching apparatus corresponding to an end of the first lightpath segment.

29. (Previously Presented) The tangible machine-recordable medium of claim 25, wherein the first GMPLS-based label includes at least one field identifying a wavelength employed for carrying signals over the first lightpath segment.

30. (Previously Presented) The tangible machine-recordable medium of claim 25, wherein execution of the instructions further performs the operation of storing a time-reserved use of the first lightpath segment that is scheduled in a reservation table maintained by the switching apparatus